FIG. 1

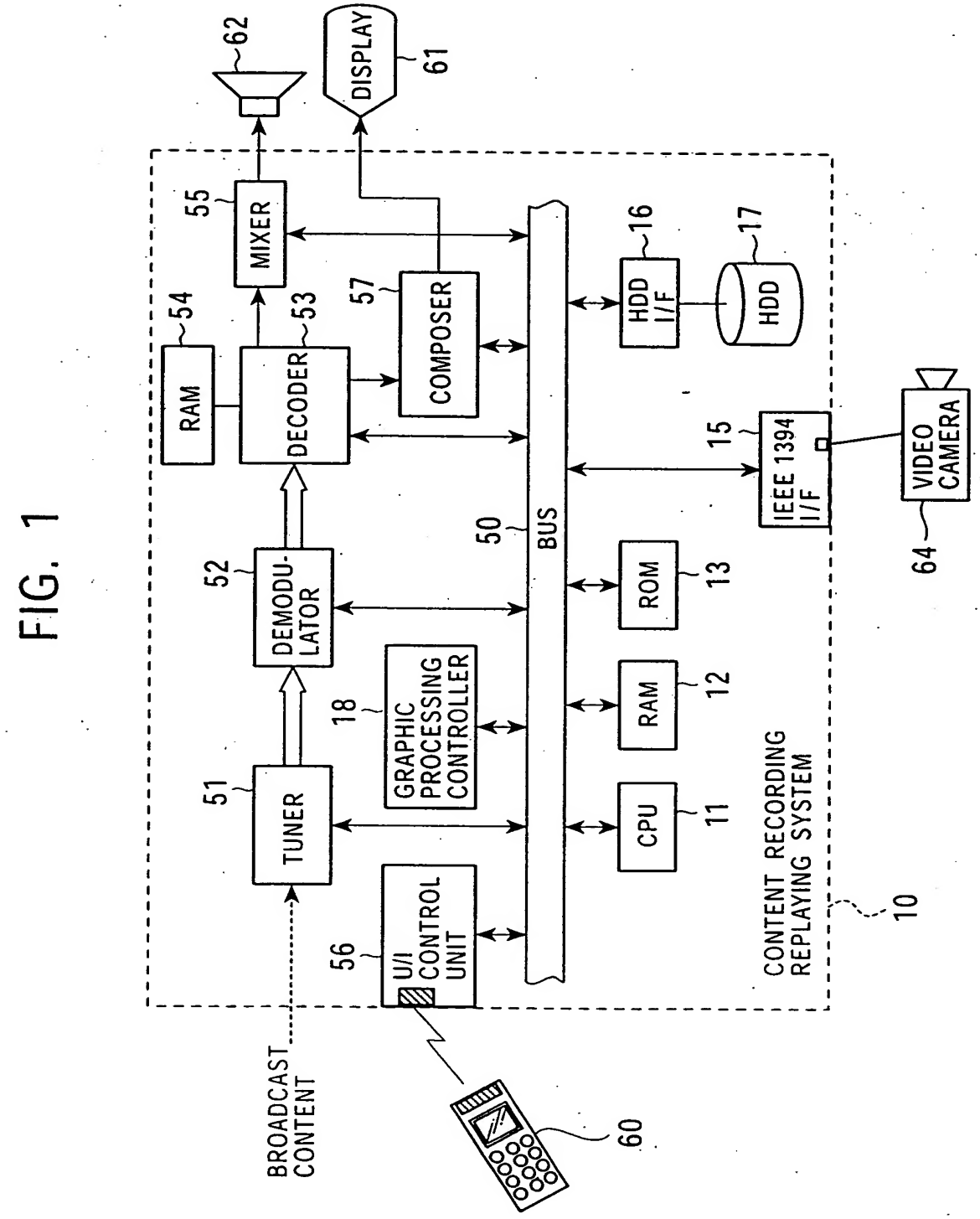
62
DISPLAY
61
55
MIXER
54
RAM
53
DECODER
57
COMPOSER
16
HDD I/F
17
HDD
15
IEEE 1394 I/F
VIDEO CAMERA
64
52
DEMODU-LATOR
50
BUS
ROM
13
18
GRAPHIC PROCESSING CONTROLLER
RAM
12
51
TUNER
CPU
11
56
U/I CONTROL UNIT
CONTENT RECORDING REPLAYING SYSTEM
10
BROADCAST CONTENT
60

FIG. 2

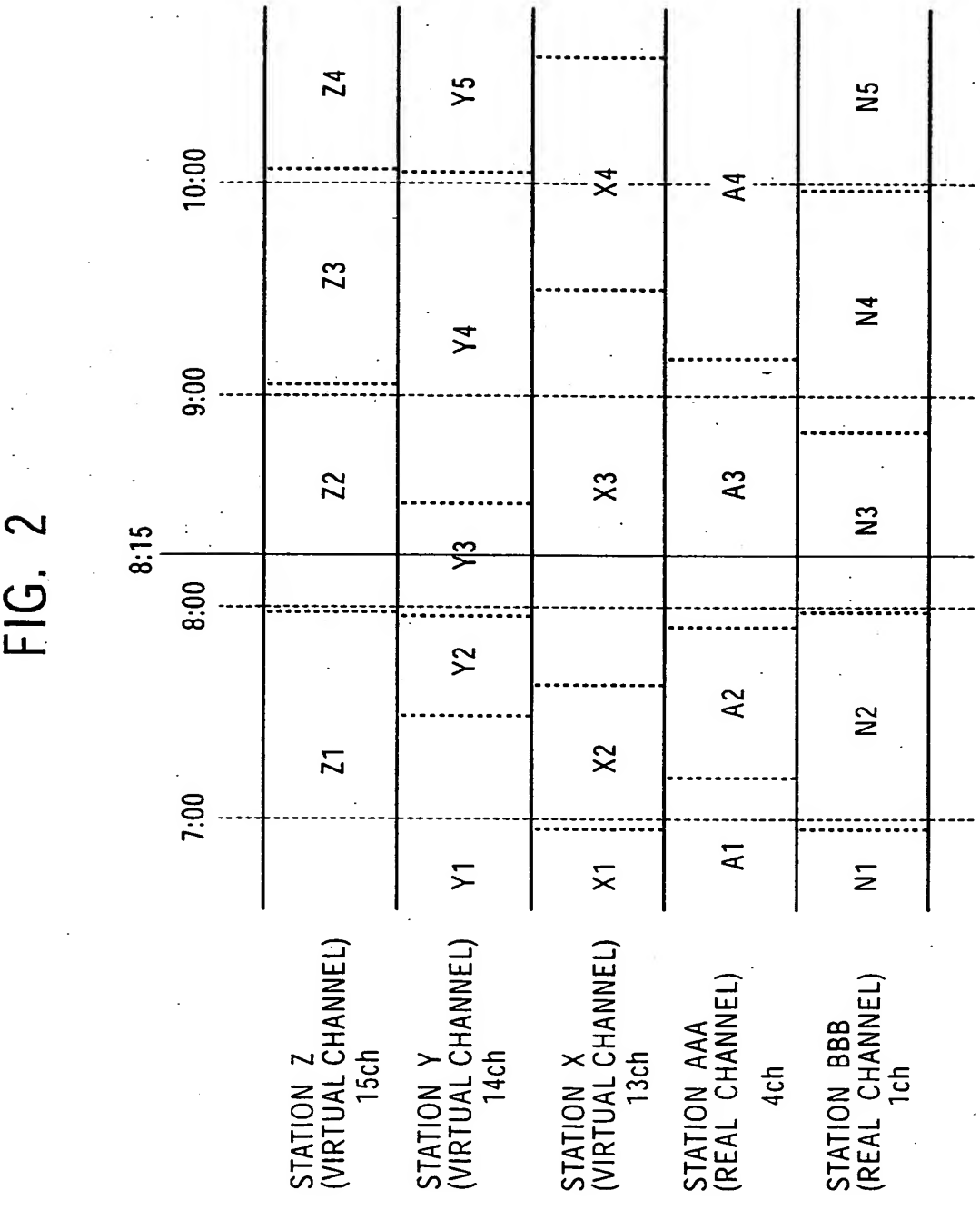
7:00
8:00
8:15
9:00
10:00
STATION Z (VIRTUAL CHANNEL) 15ch
STATION Y (VIRTUAL CHANNEL) 14ch
STATION X (VIRTUAL CHANNEL) 13ch
STATION AAA (REAL CHANNEL) 4ch
STATION BBB (REAL CHANNEL) 1ch
Z1
Z2
Z3
Z4
Y1
Y2
Y3
Y4
Y5
X1
X2
X3
X4
A1
A2
A3
A4
N1
N2
N3
N4
N5
CONTENT RECORD MAP

FIG. 3

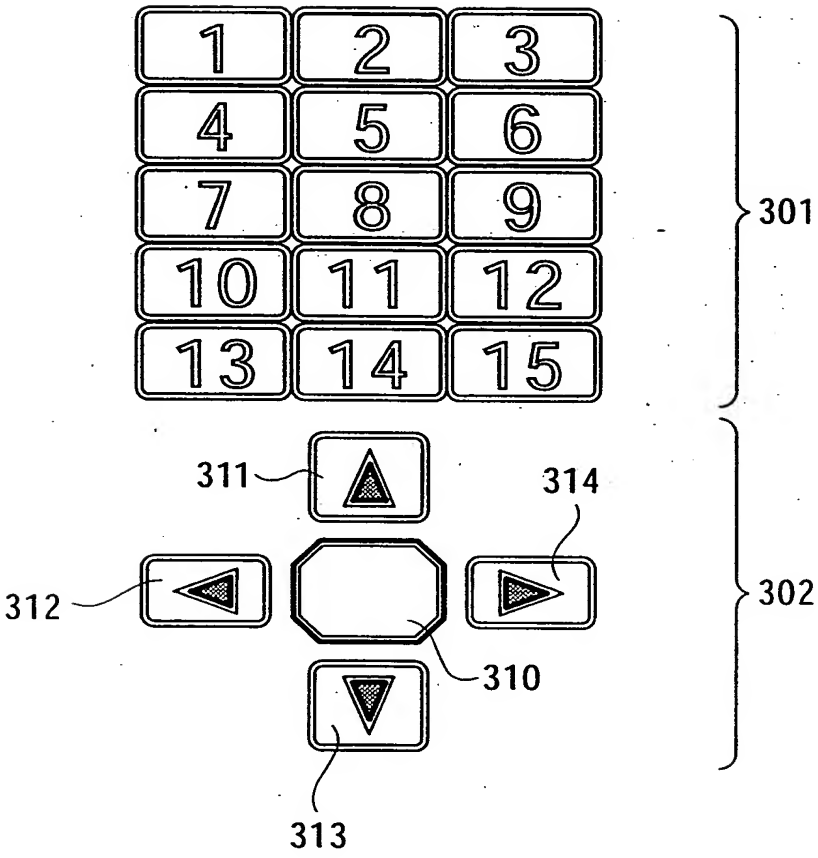

FIG. 4

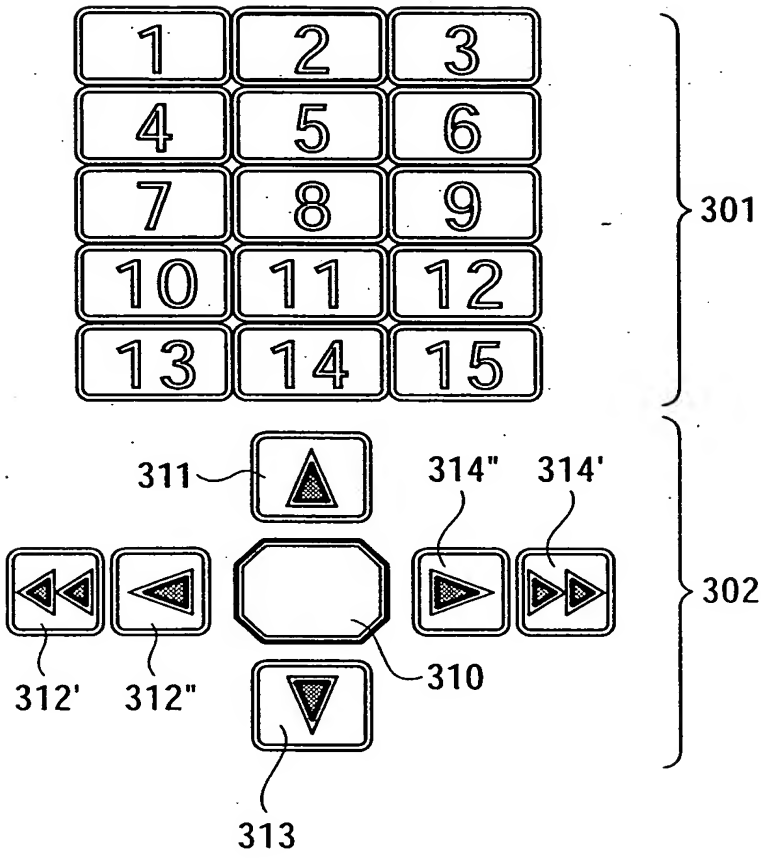

FIG. 5

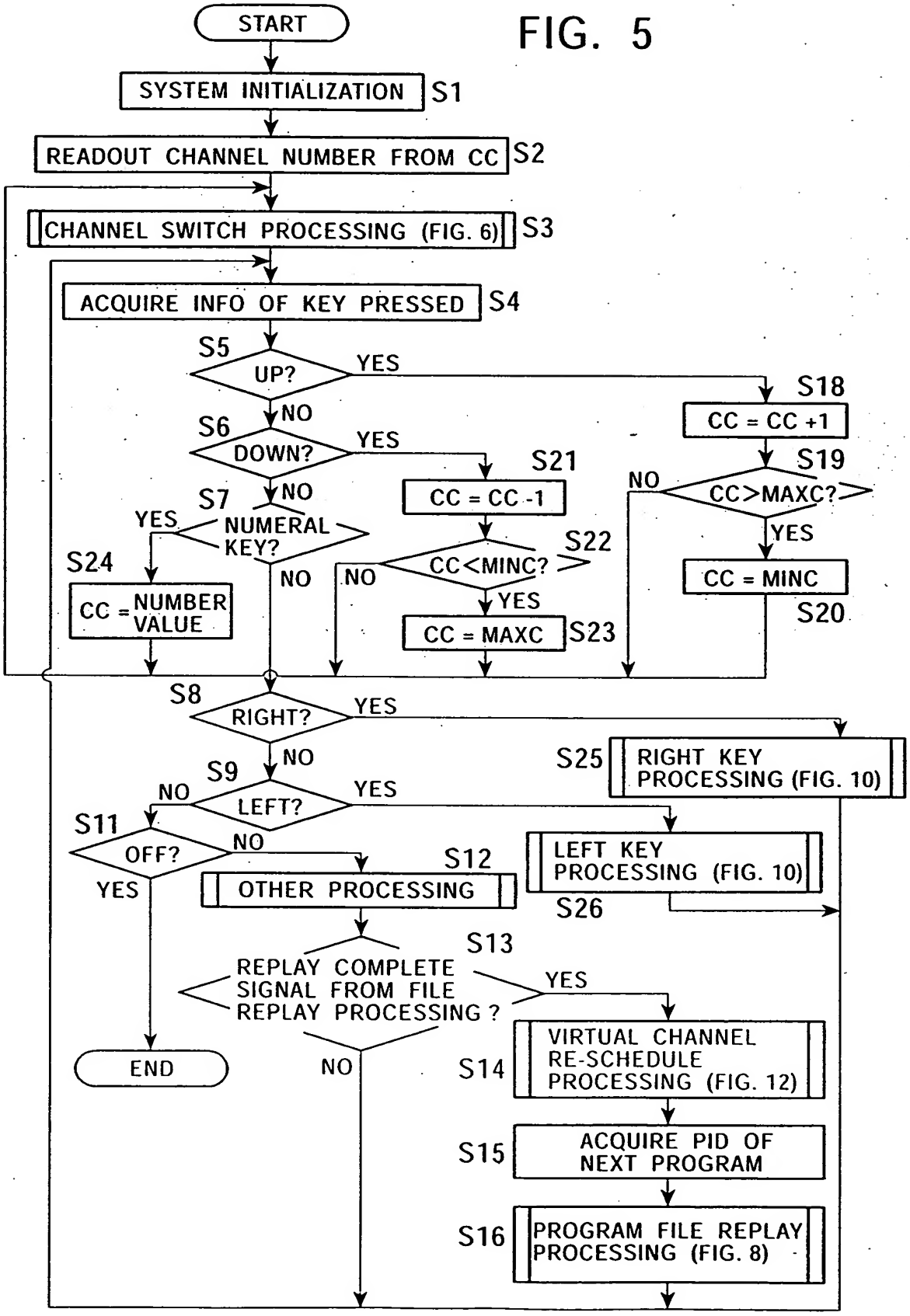
START
SYSTEM INITIALIZATION
S1
READOUT CHANNEL NUMBER FROM CC
S2
CHANNEL SWITCH PROCESSING (FIG. 6)
S3
ACQUIRE INFO OF KEY PRESSED
S4
S5
UP?
YES
NO
S18
CC = CC +1
S19
CC>MAXC?
NO
YES
CC = MINC
S20
S6
DOWN?
YES
NO
S21
CC = CC -1
S22
CC<MINC?
NO
YES
CC = MAXC
S23
S7
NUMERAL KEY?
YES
NO
S24
CC = NUMBER VALUE
S8
RIGHT?
YES
NO
S25
RIGHT KEY PROCESSING (FIG. 10)
S9
LEFT?
NO
YES
S11
OFF?
NO
YES
S12
OTHER PROCESSING
LEFT KEY PROCESSING (FIG. 10)
S26
S13
REPLAY COMPLETE SIGNAL FROM FILE REPLAY PROCESSING ?
YES
NO
END
S14
VIRTUAL CHANNEL RE-SCHEDULE PROCESSING (FIG. 12)
S15
ACQUIRE PID OF NEXT PROGRAM
S16
PROGRAM FILE REPLAY PROCESSING (FIG. 8)

FIG. 7

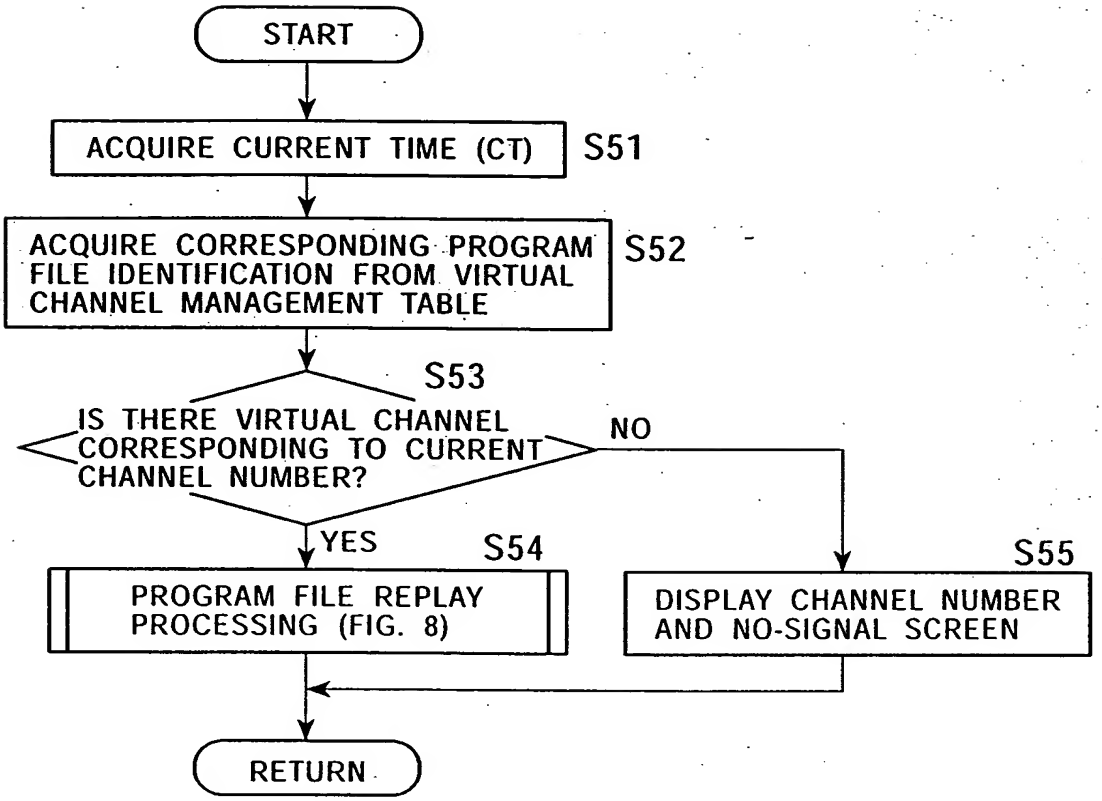
START
ACQUIRE CURRENT TIME (CT)
S51
ACQUIRE CORRESPONDING PROGRAM FILE IDENTIFICATION FROM VIRTUAL CHANNEL MANAGEMENT TABLE
S52
S53
IS THERE VIRTUAL CHANNEL CORRESPONDING TO CURRENT CHANNEL NUMBER?
NO
YES
S54
PROGRAM FILE REPLAY PROCESSING (FIG. 8)
S55
DISPLAY CHANNEL NUMBER AND NO-SIGNAL SCREEN
RETURN

FIG. 8

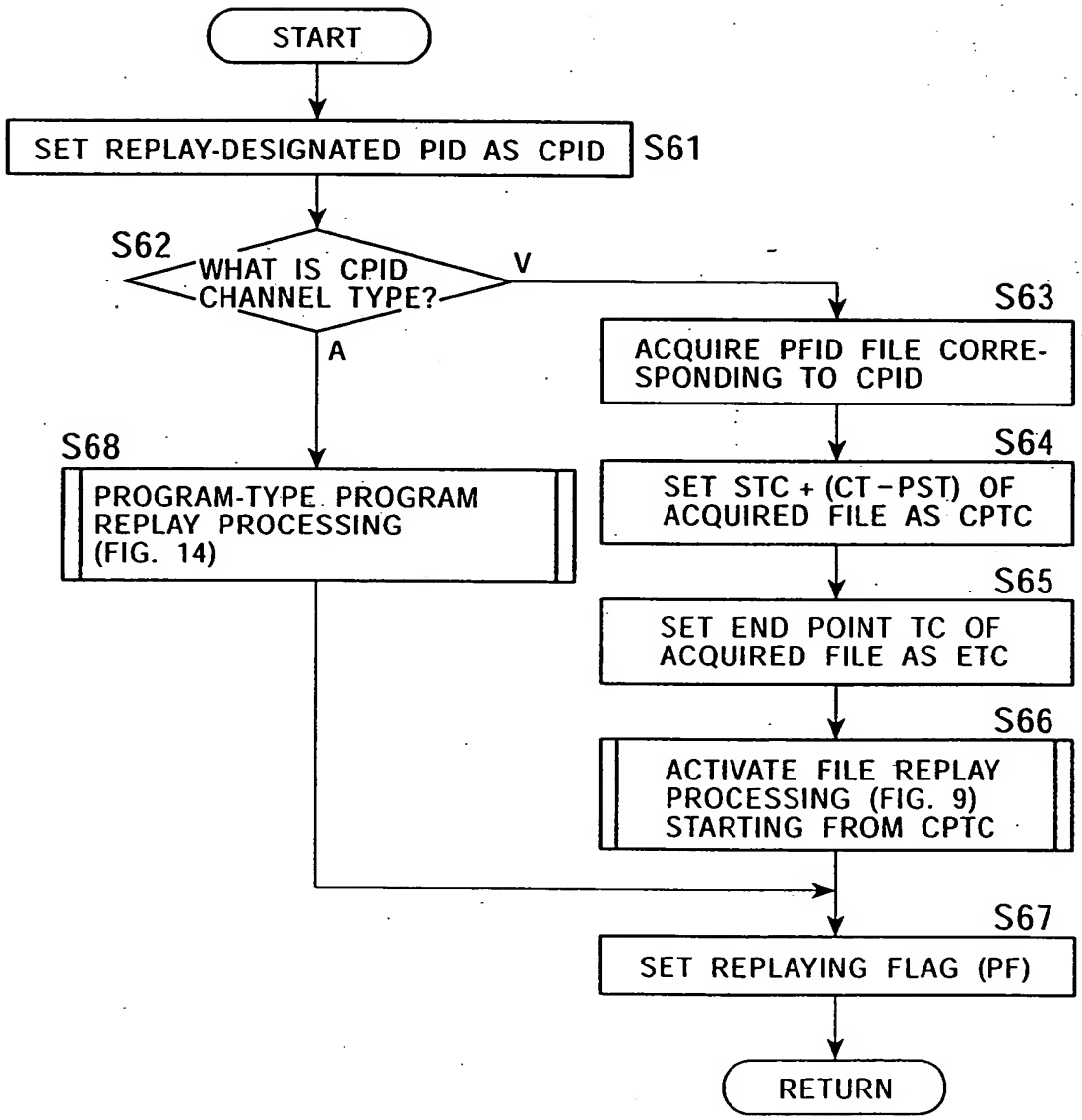
START
SET REPLAY-DESIGNATED PID AS CPID
S61
S62
WHAT IS CPID CHANNEL TYPE?
V
A
S63
ACQUIRE PFID FILE CORRESPONDING TO CPID
S64
SET STC + (CT − PST) OF ACQUIRED FILE AS CPTC
S65
SET END POINT TC OF ACQUIRED FILE AS ETC
S66
ACTIVATE FILE REPLAY PROCESSING (FIG. 9) STARTING FROM CPTC
S68
PROGRAM-TYPE PROGRAM REPLAY PROCESSING (FIG. 14)
S67
SET REPLAYING FLAG (PF)
RETURN

FIG. 9

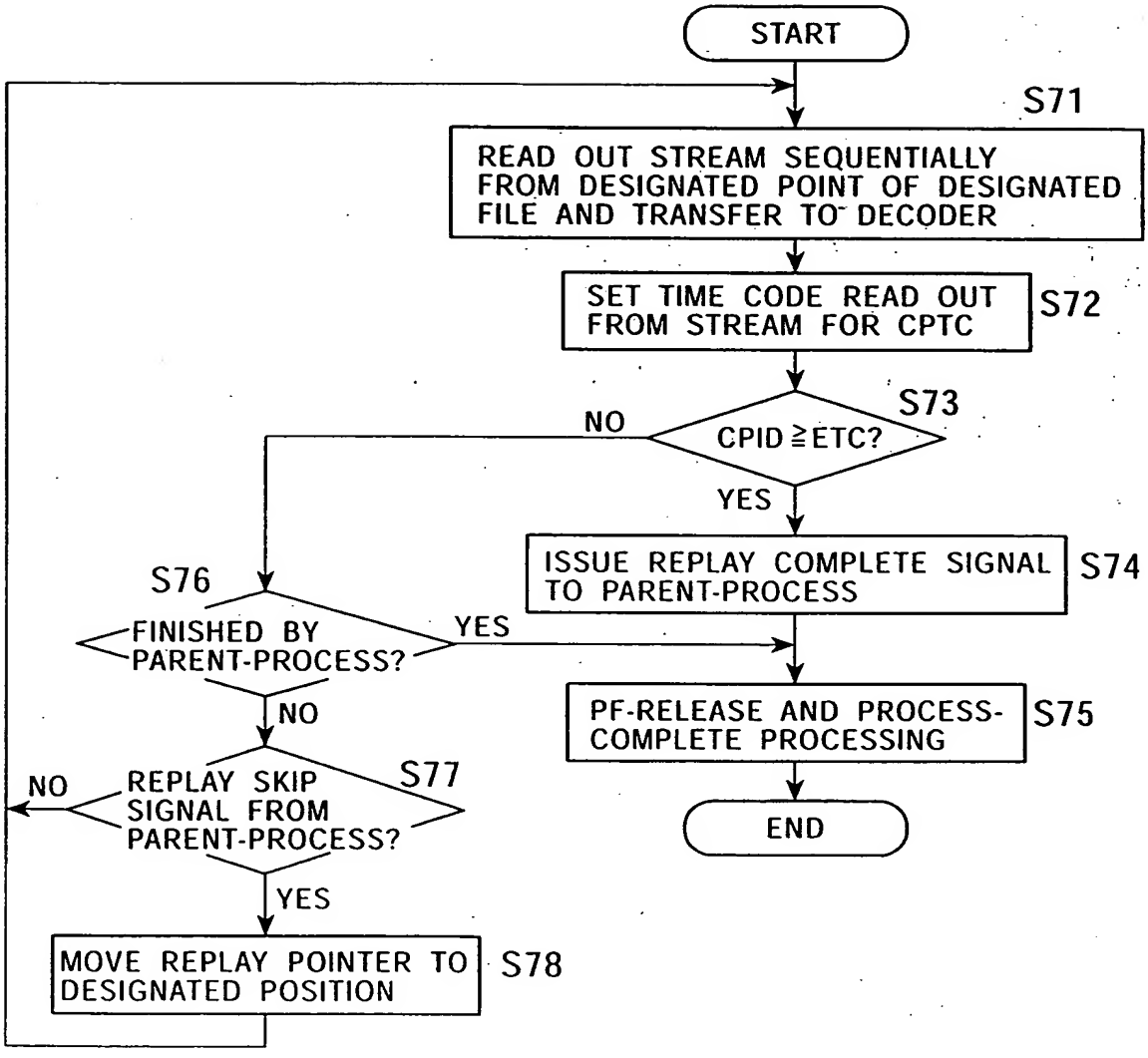
START
S71
READ OUT STREAM SEQUENTIALLY FROM DESIGNATED POINT OF DESIGNATED FILE AND TRANSFER TO DECODER
SET TIME CODE READ OUT FROM STREAM FOR CPTC
S72
S73
NO
CPID ≧ ETC?
YES
ISSUE REPLAY COMPLETE SIGNAL TO PARENT-PROCESS
S74
S76
FINISHED BY PARENT-PROCESS?
YES
NO
PF-RELEASE AND PROCESS-COMPLETE PROCESSING
S75
END
NO
REPLAY SKIP SIGNAL FROM PARENT-PROCESS?
S77
YES
MOVE REPLAY POINTER TO DESIGNATED POSITION
S78

FIG. 10

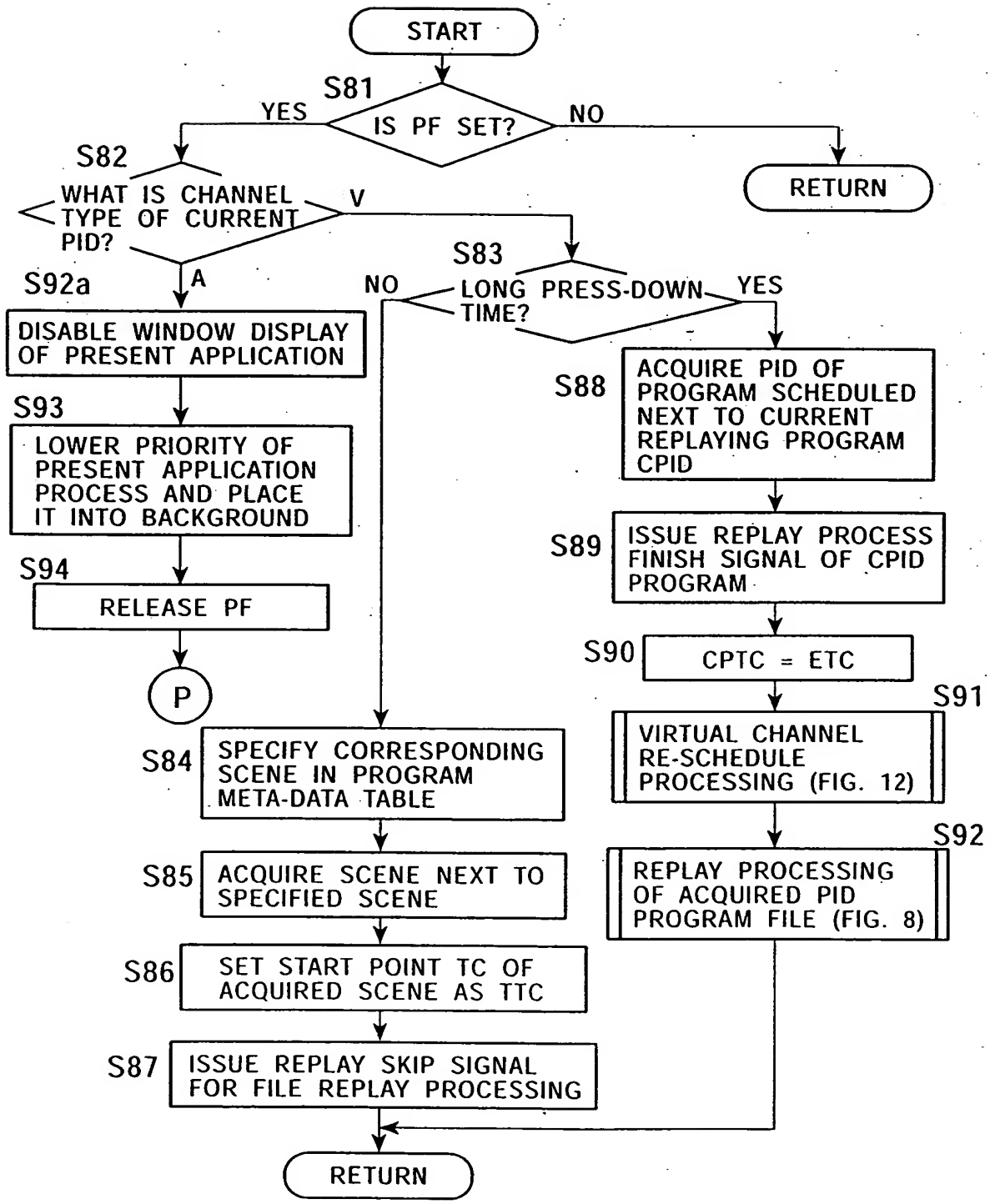
START
S81
IS PF SET?
YES
NO
RETURN
S82
WHAT IS CHANNEL TYPE OF CURRENT PID?
V
A
S83
LONG PRESS-DOWN TIME?
NO
YES
S92a
DISABLE WINDOW DISPLAY OF PRESENT APPLICATION
S93
LOWER PRIORITY OF PRESENT APPLICATION PROCESS AND PLACE IT INTO BACKGROUND
S94
RELEASE PF
P
S88
ACQUIRE PID OF PROGRAM SCHEDULED NEXT TO CURRENT REPLAYING PROGRAM CPID
S89
ISSUE REPLAY PROCESS FINISH SIGNAL OF CPID PROGRAM
S90
CPTC = ETC
S91
VIRTUAL CHANNEL RE-SCHEDULE PROCESSING (FIG. 12)
S92
REPLAY PROCESSING OF ACQUIRED PID PROGRAM FILE (FIG. 8)
S84
SPECIFY CORRESPONDING SCENE IN PROGRAM META-DATA TABLE
S85
ACQUIRE SCENE NEXT TO SPECIFIED SCENE
S86
SET START POINT TC OF ACQUIRED SCENE AS TTC
S87
ISSUE REPLAY SKIP SIGNAL FOR FILE REPLAY PROCESSING
RETURN

FIG. 11

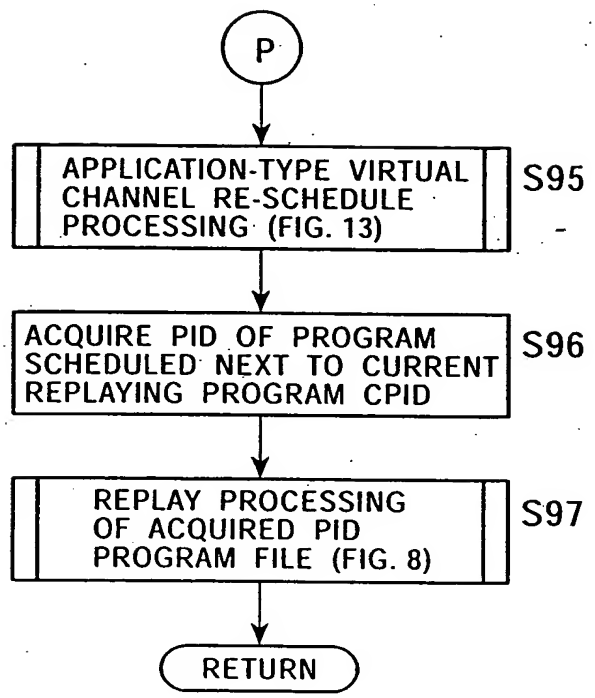
P
APPLICATION-TYPE VIRTUAL CHANNEL RE-SCHEDULE PROCESSING (FIG. 13)
S95
ACQUIRE PID OF PROGRAM SCHEDULED NEXT TO CURRENT REPLAYING PROGRAM CPID
S96
REPLAY PROCESSING OF ACQUIRED PID PROGRAM FILE (FIG. 8)
S97
RETURN

FIG. 12

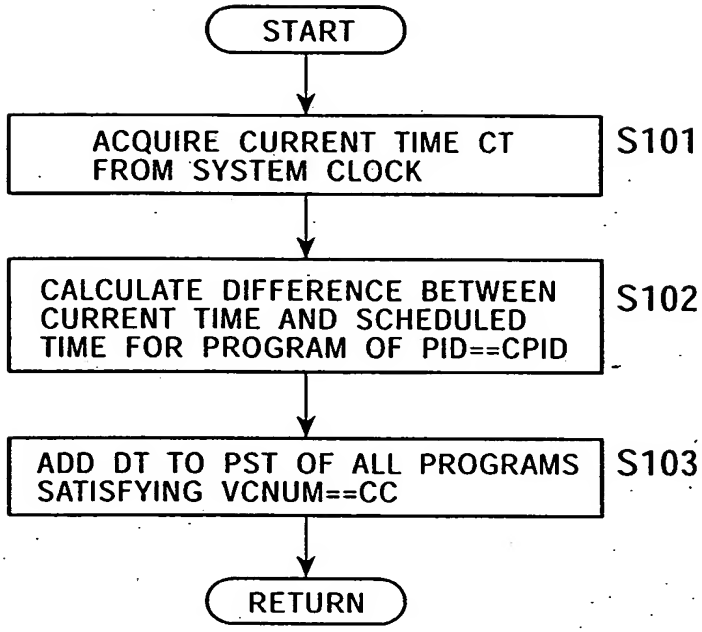
START
ACQUIRE CURRENT TIME CT FROM SYSTEM CLOCK
S101
CALCULATE DIFFERENCE BETWEEN CURRENT TIME AND SCHEDULED TIME FOR PROGRAM OF PID==CPID
S102
ADD DT TO PST OF ALL PROGRAMS SATISFYING VCNUM==CC
S103
RETURN

FIG. 13

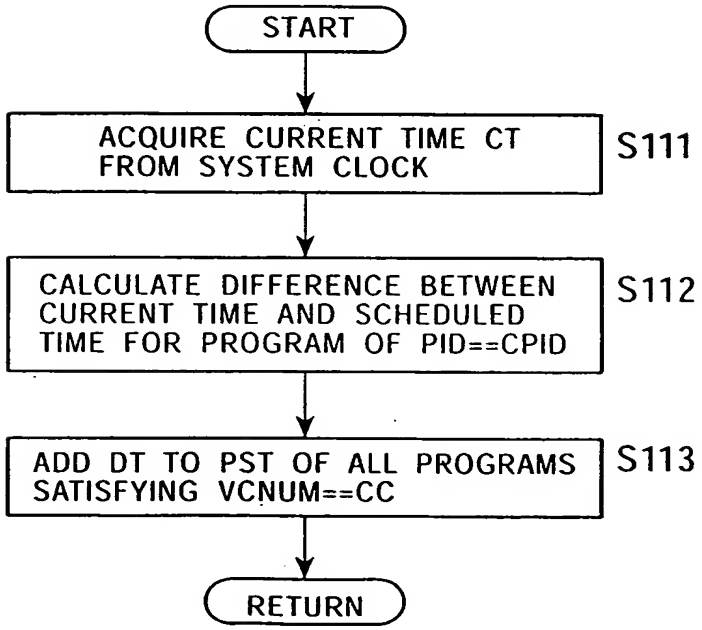
START
ACQUIRE CURRENT TIME CT FROM SYSTEM CLOCK
S111
CALCULATE DIFFERENCE BETWEEN CURRENT TIME AND SCHEDULED TIME FOR PROGRAM OF PID==CPID
S112
ADD DT TO PST OF ALL PROGRAMS SATISFYING VCNUM==CC
S113
RETURN

FIG. 14

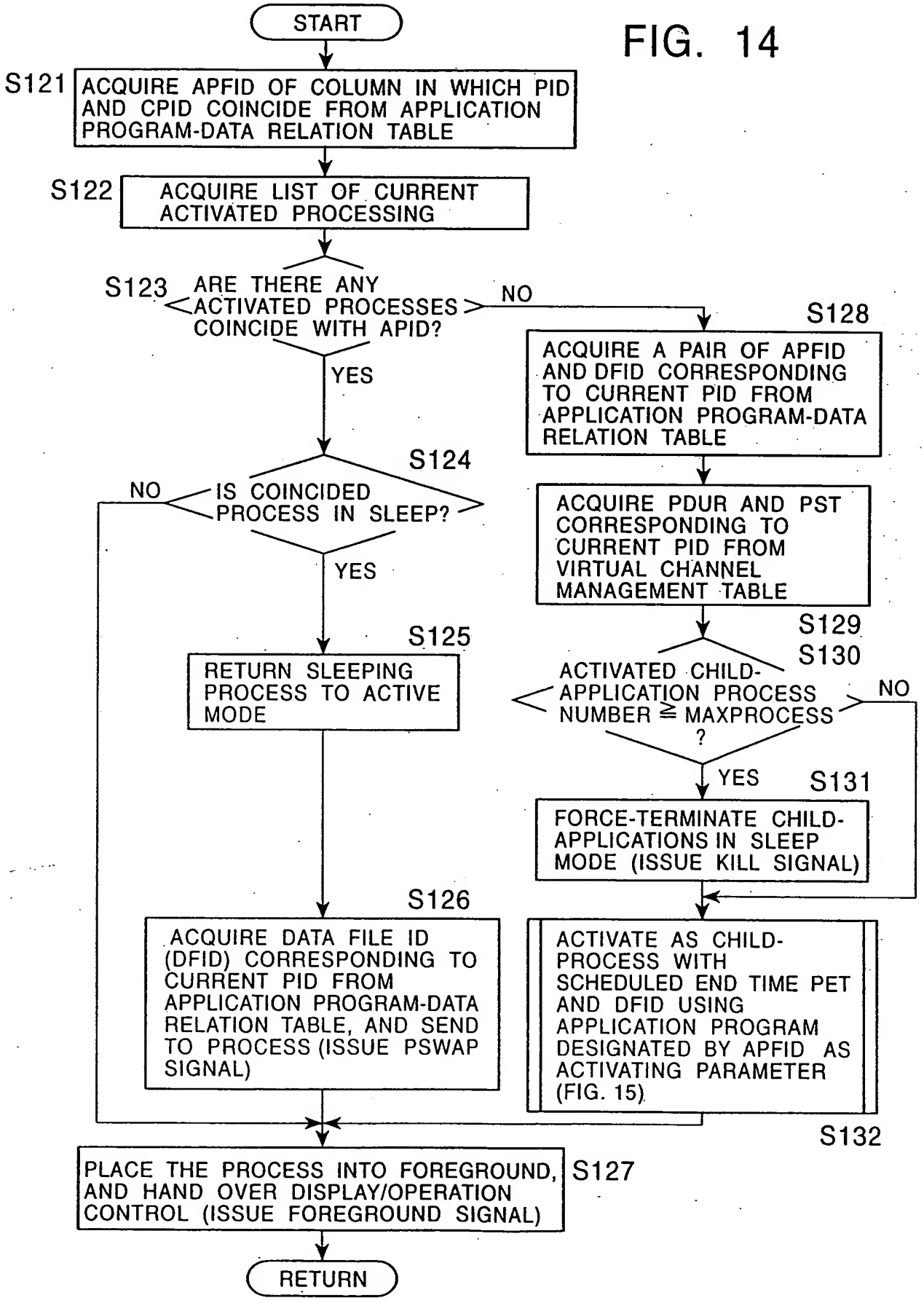
START
S121
ACQUIRE APFID OF COLUMN IN WHICH PID AND CPID COINCIDE FROM APPLICATION PROGRAM-DATA RELATION TABLE
S122
ACQUIRE LIST OF CURRENT ACTIVATED PROCESSING
S123
ARE THERE ANY ACTIVATED PROCESSES COINCIDE WITH APID?
NO
YES
S124
IS COINCIDED PROCESS IN SLEEP?
NO
YES
S125
RETURN SLEEPING PROCESS TO ACTIVE MODE
S126
ACQUIRE DATA FILE ID (DFID) CORRESPONDING TO CURRENT PID FROM APPLICATION PROGRAM-DATA RELATION TABLE, AND SEND TO PROCESS (ISSUE PSWAP SIGNAL)
S128
ACQUIRE A PAIR OF APFID AND DFID CORRESPONDING TO CURRENT PID FROM APPLICATION PROGRAM-DATA RELATION TABLE
ACQUIRE PDUR AND PST CORRESPONDING TO CURRENT PID FROM VIRTUAL CHANNEL MANAGEMENT TABLE
S129
S130
ACTIVATED CHILD-APPLICATION PROCESS NUMBER ≧ MAXPROCESS ?
NO
YES
S131
FORCE-TERMINATE CHILD-APPLICATIONS IN SLEEP MODE (ISSUE KILL SIGNAL)
ACTIVATE AS CHILD-PROCESS WITH SCHEDULED END TIME PET AND DFID USING APPLICATION PROGRAM DESIGNATED BY APFID AS ACTIVATING PARAMETER (FIG. 15)
S132
PLACE THE PROCESS INTO FOREGROUND, AND HAND OVER DISPLAY/OPERATION CONTROL (ISSUE FOREGROUND SIGNAL)
S127
RETURN

FIG. 15

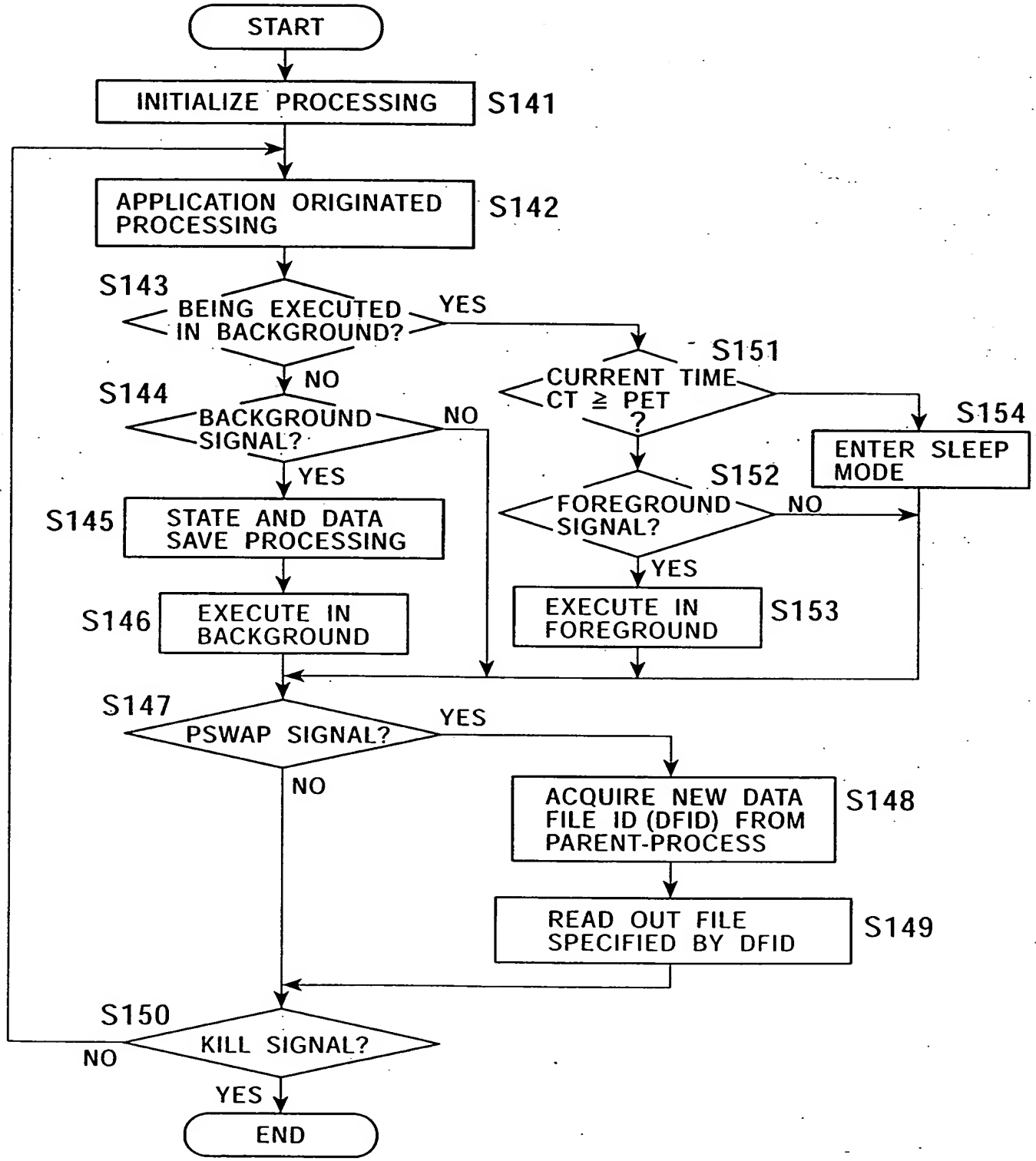
START
INITIALIZE PROCESSING
S141
APPLICATION ORIGINATED PROCESSING
S142
S143
BEING EXECUTED IN BACKGROUND?
YES
NO
S144
BACKGROUND SIGNAL?
NO
YES
S145
STATE AND DATA SAVE PROCESSING
S146
EXECUTE IN BACKGROUND
S151
CURRENT TIME CT ≧ PET ?
S154
ENTER SLEEP MODE
S152
FOREGROUND SIGNAL?
NO
YES
EXECUTE IN FOREGROUND
S153
S147
PSWAP SIGNAL?
YES
NO
ACQUIRE NEW DATA FILE ID (DFID) FROM PARENT-PROCESS
S148
READ OUT FILE SPECIFIED BY DFID
S149
S150
KILL SIGNAL?
NO
YES
END

FIG. 16

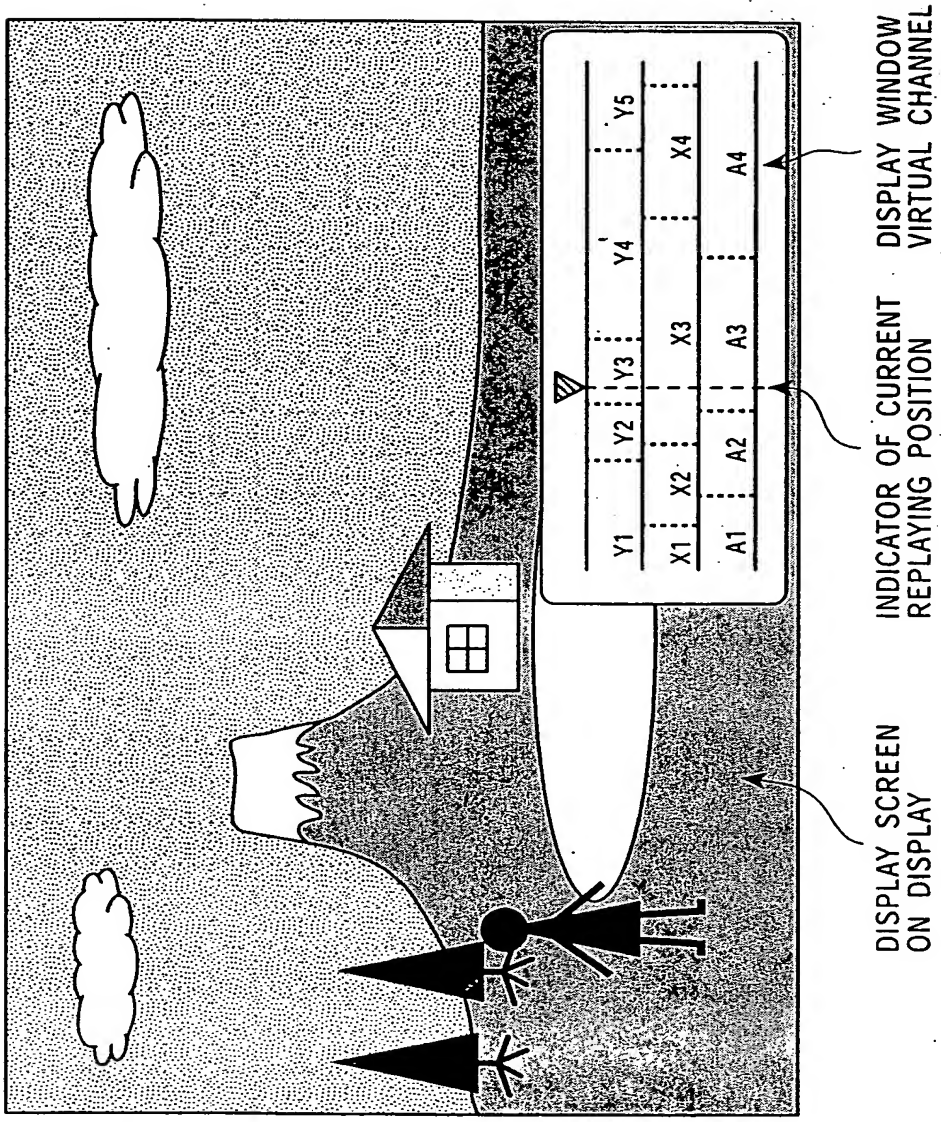
Y1
Y2
Y3
Y4'
Y5
X1
X2
X3
X4
A1
A2
A3
A4
DISPLAY SCREEN ON DISPLAY
INDICATOR OF CURRENT REPLAYING POSITION
DISPLAY WINDOW OF VIRTUAL CHANNEL

FIG. 17

VIRTUAL CHANNEL NUMBER (VCNUM)	VIRTUAL CHANNEL NAME (VCNAME)	PROGRAM ID (PID)	PROGRAM NAME (PNAME)	START TIME (PST)	REPLAY TIME (PDUR)	FILE ID (PFID)	CHANNEL TYPE (CTYPE)
13	X	X1	- - - -	6:30	30:00	xfile#1	V
13	X	X2	- - - -	7:00	50:00	xfile#2	V
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
14	Y	Y1	- - - -	6:00	1:40:00	yfile#1	V
14	Y	Y2	- - - -	7:40	20:00	yfile#2	V
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
15	Q	Q1	- - - -	7:00	2:00:00	qfile#1	A
15	Q	Q2	- - - -	9:00	2:00:00	qfile#2	A
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮

FIG. 18

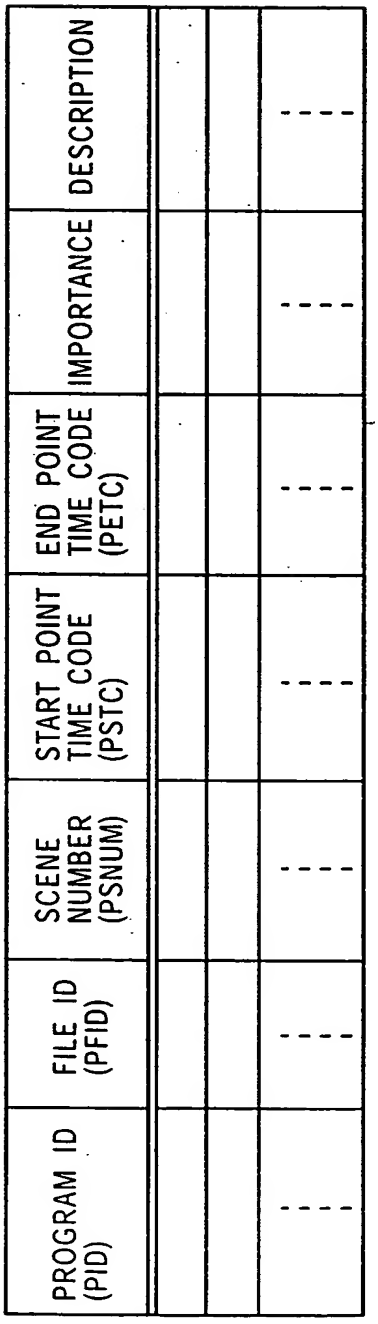
PROGRAM ID (PID)
FILE ID (PFID)
SCENE NUMBER (PSNUM)
START POINT TIME CODE (PSTC)
END POINT TIME CODE (PETC)
IMPORTANCE
DESCRIPTION

FIG. 19

PROGRAM ID (PID)	FILE ID (PFID)	APPLICATION PROGRAM FILE ID (APFID)	DATA FILE ID (DFID)	DATA FILE ID (DFID)	DATA FILE ID (DFID)
Q1	qfile1	AQ	$DQ1_1$	-	
Q2	qfile2	AQ	$DQ2_1$	$DQ2_2$	$DQ2_3$
⋮	⋮	⋮	⋮	⋮	⋮